

Listing of Claims:

1. (Currently Amended) An image acquiring device for performing time lapse imaging, comprising:

an imaging portion which performs imaging of a subject;

5 a time lapse imaging condition setting portion which sets a time lapse imaging condition including at least an exposure time and an imaging interval, prior to the imaging of the subject by the imaging portion;

10 a determining portion which determines a contradiction of the time lapse imaging condition set by the time lapse imaging condition setting portion according to a predetermined criterion; and

15 a presenting portion which presents at least information relating to the contradiction of the time lapse imaging condition based on a determined result determined by the determining portion.

2. (Original) The image acquiring device for performing time lapse imaging according to claim 1, wherein the determining portion determines the contradiction of the time lapse imaging condition by using a relation between the exposure time and the imaging interval as the predetermined criterion.

3. (Currently Amended) The image acquiring device for performing time lapse imaging according to claim 2, further comprising:

an avoiding condition generating portion which generates a plurality of time lapse imaging conditions for avoiding the contradiction of the time lapse imaging condition based on the determined result determined by the determining portion, and causes ~~to present~~ information relating to the plurality of time lapse imaging conditions to be presented by the presenting portion;

a selecting portion which selects one of the plurality of time lapse imaging ~~condition~~ conditions from ~~within~~ the information relating to the plurality of time lapse imaging conditions presented by the presenting portion; and

an instructing portion which instructs the imaging portion to execute time lapse imaging based on the time lapse imaging condition selected by the selecting portion.

4. (Currently Amended) The image acquiring device for performing time lapse imaging according to claim 3, further comprising:

an exposure time setting portion which sets the exposure time set by the time lapse imaging condition setting portion to the imaging portion; and

a gain setting portion which enables setting of gain of an output signal from the imaging portion,

wherein, when the determining portion determines as the
10 contradiction ~~of the time lapse imaging condition in which that~~
the exposure time is longer than the imaging interval, the
plurality of time lapse imaging conditions generated by the
avoiding condition generating portion ~~changes a set~~ include a
time lapse imaging condition according to which the instructing
15 portion instructs the image acquiring device to change a value of
the exposure time set by the exposure time setting portion to ~~an~~
~~exposure time~~ be shorter than the imaging interval, and ~~sets to~~
set a value of the gain set by the gain setting portion based on
a value determined from a ratio of the exposure time after the
20 change and the imaging interval.

5. (Currently Amended) The image acquiring device for performing time lapse imaging according to claim 3, further comprising:

an exposure time setting portion which sets the exposure
5 time set by the time lapse imaging condition setting portion to the imaging portion; and

a brightness correcting portion which enables correction of brightness of an image by correcting an output signal from the imaging portion,

10 wherein, when the determining portion determines as the
contradiction ~~of the time lapse imaging condition in which~~ that
the exposure time is longer than the imaging interval, the
plurality of time lapse imaging conditions generated by the
avoiding condition generating portion ~~changes a set~~ include a
15 time lapse imaging condition according to which the instructing
portion instructs the image acquiring device to change a value of
the exposure time set by the exposure time setting portion to ~~an~~
~~exposure time~~ be shorter than the imaging interval, and ~~sets to~~
set a value for correcting the brightness of the image by the
20 brightness correcting portion based on a value determined from a
ratio of the exposure time after the change and the imaging
interval.

6. (Currently Amended) The image acquiring device for
performing time lapse imaging according to claim 3, further
comprising:

5 an exposure time setting portion which sets the exposure
time set by the time lapse imaging condition setting portion to
the imaging portion;

 a gain setting portion which enables setting of gain of an
output signal from the imaging portion; and

a brightness correcting portion which enables correction of
10 brightness of an image by correcting the output signal from the
imaging portion,

wherein, when the determining portion determines as the
contradiction ~~of the time lapse imaging conditions in which~~ that
the exposure time is longer than the imaging interval, the
15 plurality of time lapse imaging conditions generated by the
avoiding condition generating portion ~~changes a set~~ include a
time lapse imaging condition according to which the instructing
portion instructs the image acquiring device to change a value of
the exposure time set by the exposure time setting portion to ~~an~~
20 ~~exposure time~~ be shorter than the imaging interval, and ~~sets to~~
set a value of the gain set by the gain setting portion to a
value determined from a ratio of the exposure time after the
change and the imaging interval, and when ~~a set~~ the value of
the gain value determined from the ratio exceeds a maximum gain
25 value, ~~sets to set~~ the maximum gain value as the value of the
gain set by the gain setting portion and ~~sets to set~~ a value for
correcting the brightness of the image by the brightness
correction part based on a value determined from a ratio of the
value of the gain determined from the ratio and the maximum gain
30 value.

7. (Currently Amended) The image acquiring device for performing time lapse imaging according to claim 1, wherein the imaging portion ~~includes~~ comprises an imaging portion of a microscopic image acquiring device.

8. (Currently Amended) ~~An image-acquiring~~ A method for performing time lapse imaging an image acquiring device, which includes an imaging portion which performs imaging of a subject and a presenting portion, the method comprising:

5 ~~preparing an imaging portion which performs imaging of a subject;~~

setting a time lapse imaging condition including at least an exposure time and an imaging interval, prior to the imaging of the subject by the imaging portion;

10 determining a contradiction of the set time lapse imaging condition ~~set by including at least the exposure time and the imaging interval~~ according to a predetermined criterion; and

15 presenting, via the presenting section, at least information relating to the contradiction of the time lapse imaging condition based on a ~~determined~~ result of the determination of the contradiction of the time lapse imaging condition, by a ~~presenting portion.~~

9. (Currently Amended) The ~~image-acquiring method for performing time lapse imaging~~ according to claim 8, wherein the ~~predetermined criterion according to which determining-determines~~ the contradiction of the time lapse imaging condition ~~by using~~ is determined is a relation between the exposure time and the imaging interval ~~as the predetermined criterion~~.

10. (Currently Amended) The ~~image-acquiring method for performing time lapse imaging~~ according to claim 9, further comprising:

generating a plurality of time lapse imaging conditions for avoiding the contradiction of the time lapse imaging condition based on the ~~determined~~ result of the determination of the contradiction of the time lapse imaging condition, and presenting information relating to the plurality of time lapse imaging conditions by the presenting portion;

selecting one of the plurality of time lapse imaging ~~condition~~ conditions from ~~within~~ the information relating to the plurality of time lapse imaging conditions presented by the presenting portion; and

instructing the imaging portion to execute time lapse imaging based on the selected time lapse imaging condition ~~selected from within the plurality of time lapse imaging conditions~~.

11. (Currently Amended) The ~~image-acquiring method for performing time lapse imaging according to claim 10, further comprising: preparing an exposure time setting portion which sets the exposure time by the setting of the time lapse imaging~~
5 ~~condition to the imaging portion; and preparing a gain setting portion which enables setting of gain of an output signal from the imaging portion;~~ wherein, when ~~the determining determines it is determined as~~ the contradiction of the time lapse imaging condition in which that the exposure time is longer than the
10 imaging interval, ~~the generating the~~ generated plurality of time lapse imaging conditions include a time lapse imaging condition according to which the image acquiring device is instructed to change changes a set value of the exposure time by the exposure time setting portion to an exposure time be shorter than the
15 imaging interval, and ~~sets a value of the~~ to set a gain set by the gain setting portion of an output signal from the imaging portion based on ~~the a value of the gain~~ determined from a ratio of the changed exposure time ~~after change~~ and the imaging interval.

12. (Currently Amended) The ~~image-acquiring method for performing time lapse imaging according to claim 10, further comprising: preparing an exposure time setting portion which sets~~

the exposure time by the setting of the time lapse imaging
5 condition to the imaging portion; and preparing a brightness
correcting portion which enables correction of brightness of an
image by an output signal from the imaging portion; wherein, when
the determining it is determined that as the contradiction of the
time lapse imaging condition in which that the exposure time is
10 longer than the imaging interval, ~~the generating~~ the
generated plurality of time lapse imaging conditions include a
time lapse imaging condition according to which the image
acquiring device is instructed to change ~~changes~~ a ~~set~~ value of
the exposure time by the ~~exposure time setting~~ portion to an
15 ~~exposure time~~ be shorter than the imaging interval, and ~~sets to~~
set a value for correcting ~~the~~ brightness of the image, by the
~~brightness~~ correcting an output signal from the imaging portion,
based on a value determined from a ratio of the changed exposure
time ~~after change~~ and the imaging interval.

13. (Currently Amended) The ~~image acquiring~~ method for
performing time lapse imaging according to claim 10, further
~~comprising: preparing an exposure time setting portion which sets~~
the exposure time by the setting of the time lapse imaging
5 condition to the imaging portion; ~~preparing a gain setting~~
portion which enables setting of gain of an output signal from
the imaging portion; and ~~preparing a brightness correcting~~

~~portion which enables correction of brightness of an image by the output signal from the imaging portion, wherein, when the~~
10 ~~determining determines it is determined as the contradiction of the time lapse imaging condition in which that the exposure time is longer than the imaging interval, ~~the generating the generated~~ plurality of time lapse imaging conditions include a time lapse imaging condition according to which the image~~
15 ~~acquiring device is instructed to change ~~changes~~ a ~~set~~ value of the exposure time by the exposure time setting portion to an exposure time be shorter than the imaging interval, and ~~sets to set~~ a value of the gain ~~set by the gain setting portion of an output signal from the imaging portion~~ to a value determined from~~
20 ~~a ratio of the changed exposure time ~~after change~~ and the imaging interval, and ~~wherein~~ when ~~a set~~ the value of the gain value determined from the ratio exceeds a maximum gain value, ~~sets~~ the maximum gain value is set as the gain value ~~of the gain set by the gain setting portion~~ and ~~sets~~ a value for correcting the~~
25 ~~brightness of the image by ~~the brightness~~ correcting the output signal from the imaging portion is set portion based on a value determined from a ratio of the value of the gain determined from the ratio and the maximum gain value.~~

14. (Currently Amended) The ~~image acquiring method for performing time lapse imaging~~ according to claim 8, wherein the

imaging portion ~~includes~~ comprises an imaging portion of a microscopic image acquiring device for fluorescence photography.

15. (Currently Amended) An image acquiring device for performing time lapse imaging, comprising:

imaging means for performing imaging of a subject;

time lapse imaging condition setting means for setting a
5 time lapse imaging condition including at least an exposure time and an imaging interval, prior to the imaging of the subject by the imaging means;

determining means for determining a contradiction of the time lapse imaging condition set by the time lapse imaging
10 condition setting means according to a predetermined criterion;
and

presenting means for presenting at least information relating to the contradiction of the time lapse imaging condition based on a determined result determined by the determining means.

16. (Original) The image acquiring device for performing time lapse imaging according to claim 15, wherein the determining means determines the contradiction of the time lapse imaging condition by using a relation between the exposure time and the imaging interval as the predetermined criterion.

17. (Currently Amended) The image acquiring device for performing time lapse imaging according to claim 16, further comprising:

avoiding condition generating means for generating a plurality of time lapse imaging conditions for avoiding the contradiction of the time lapse imaging condition based on the determined result determined by the determining means, and causing ~~to present~~ information relating to the plurality of time lapse imaging conditions to be presented by the presenting means;

selecting means for selecting one of the plurality of time lapse imaging ~~condition~~ conditions from ~~within~~ the information relating to the plurality of time lapse imaging conditions presented by the presenting means; and

instructing means for instructing the imaging means to execute time lapse imaging based on the time lapse imaging condition selected by the selecting means.

18. (Currently Amended) The image acquiring device for performing time lapse imaging according to claim 17, further comprising:

exposure time setting means for setting the exposure time set by the time lapse imaging condition setting means to the imaging means; and

gain setting means for enabling setting of gain of an output signal from the imaging means,

wherein, when the determining means determines as the contradiction of the time lapse imaging condition in which that the exposure time is longer than the imaging interval, the plurality of time lapse imaging conditions generated by the avoiding condition generating means ~~changes a set~~ include a time lapse imaging condition according to which the instructing means instructs the image acquiring device to change a value of the exposure time set by the exposure time setting means to ~~an exposure time~~ be shorter than the imaging interval, and ~~sets to set~~ a value of the gain set by the gain setting means based on the value determined from a ratio of the exposure time after the change and the imaging interval.

19. (Currently Amended) The image acquiring device for performing time lapse imaging according to claim 17, further comprising:

exposure time setting means for setting the exposure time set by the time lapse imaging condition setting means to the imaging means; and

brightness correcting means for enabling correction of brightness of an image by correcting an output signal from the imaging means,

10 wherein, when the determining means determines as the
contradiction ~~of the time lapse imaging condition in which~~ that
the exposure time is longer than the imaging interval, the
plurality of time lapse imaging conditions generated by the
avoiding condition generating means ~~changes a set~~ include a time
15 lapse imaging condition according to which the instructing means
instructs the image acquiring device to change a value of the
exposure time set by the exposure time setting means to ~~an~~
~~exposure time~~ be shorter than the imaging interval, and ~~sets to~~
set a value for correcting the brightness of the image by the
20 brightness correcting means based on a value determined from a
ratio of the exposure time after the change and the imaging
interval.

20. (Currently Amended) The image acquiring device for
performing time lapse imaging according to claim 17, further
comprising:

5 exposure time setting means for setting the exposure time
set by the time lapse imaging condition setting means to the
imaging means;

 gain setting means for enabling setting of gain of an output
signal from the imaging means; and

brightness correcting means for enabling correction of
10 brightness of the image by correcting the output signal from the
imaging means,

wherein, when the determining means determines as the
contradiction ~~of the time lapse imaging condition in which that~~
the exposure time is longer than the imaging interval, ~~the~~
15 plurality of time lapse imaging conditions generated by the
avoiding condition generating means ~~changes a set~~ include a time
lapse imaging condition according to which the instructing means
instructs the image acquiring device to change a value of the
exposure time set by the exposure time setting means to ~~an~~
20 ~~exposure time~~ be shorter than the imaging interval, and ~~sets to~~
set a value of the gain set by the gain setting means to the
value determined from a ratio of the exposure time after
the change and the imaging interval, and when ~~a set~~ the value of
the gain value determined from the ratio exceeds a maximum gain
25 value, ~~sets to set~~ the maximum gain value as the value of the
gain set by the gain setting means and sets a value for
correcting the brightness of the image by the brightness
correction means based on the value determined from a ratio of
the value of the gain determined from the ratio and the maximum
30 gain value.

21. (Currently Amended) The image acquiring device for performing time lapse imaging according to claim 15, wherein the imaging means ~~includes~~ comprises imaging means of a microscopic image acquiring device.

22. (New) An image acquiring device for performing time lapse imaging, comprising:

an imaging portion which performs imaging of a subject;

5 a time lapse imaging condition setting portion which sets a time lapse imaging condition including at least an exposure time and an imaging interval, prior to the imaging of the subject by the imaging portion;

10 a determining portion which determines a contradiction of the time lapse imaging condition set by the time lapse imaging condition setting portion according to a predetermined criterion; and

15 a presenting portion which presents at least information relating to the contradiction of the time lapse imaging condition based on a determined result determined by the determining portion;

an avoiding condition generating portion which generates a plurality of time lapse imaging conditions for avoiding the contradiction of the time lapse imaging condition based on the determined result determined by the determining portion, and

20 causes information relating to the plurality of time lapse
imaging conditions to be presented by the presenting portion;
a selecting portion which selects one of the plurality
of time lapse imaging conditions from the information relating to
the plurality of time lapse imaging conditions presented by the
25 presenting portion;
an instructing portion which instructs the imaging portion
to execute time lapse imaging based on the time lapse imaging
condition selected by the selecting portion;
an exposure time setting portion which sets the exposure
30 time set by the time lapse imaging condition setting portion to
the imaging portion;
a gain setting portion which enables setting of gain of an
output signal from the imaging portion; and
a brightness correcting portion which enables correction of
35 brightness of an image by correcting the output signal from the
imaging portion;
wherein the determining portion determines the contradiction
of the time lapse imaging condition by using a relation between
the exposure time and the imaging interval as the predetermined
40 criterion;
wherein, when the determining portion determines as the
contradiction that the exposure time is longer than the imaging
interval, the avoiding condition generating portion changes a set

value of the exposure time set by the exposure time setting
portion to be shorter than the imaging interval, and sets a value
45 of the gain set by the gain setting portion to a value determined
from a ratio of the exposure time after the change and the
imaging interval, and when a set gain value exceeds a maximum
gain value, sets the maximum gain value as the value of the gain
50 set by the gain setting portion and sets a value for correcting
the brightness of the image by the brightness correction part
based on a value determined from a ratio of the value of the gain
determined from the ratio and the maximum gain value.

23. (New) The image acquiring device for performing time
lapse imaging according to claim 22, wherein the imaging portion
comprises an imaging portion of a microscopic image acquiring
device.

24. (New) A method for an image acquiring device, which
includes an imaging portion which performs imaging of a subject
and a presenting portion, the method comprising:

5 setting a time lapse imaging condition including at least an
exposure time and an imaging interval, prior to the imaging of
the subject by the imaging portion;

determining a contradiction of the set time lapse imaging
condition according to a predetermined criterion;

presenting, via the presenting section, at least information
10 relating to the contradiction of the time lapse imaging condition
based on a result of the determination of the contradiction;

generating a plurality of time lapse imaging conditions for
avoiding the contradiction of the time lapse imaging condition
based on the result of the determination of the contradiction of
15 the time lapse imaging condition, and presenting information
relating to the plurality of time lapse imaging conditions by the
presenting portion;

selecting one of the plurality of time lapse imaging
conditions from the information relating to the plurality of time
20 lapse imaging conditions presented by the presenting portion; and
instructing the imaging portion to execute time lapse
imaging based on the selected time lapse imaging condition;

wherein the predetermined criterion according to which the
contradiction of the time lapse imaging condition is determined
25 is a relation between the exposure time and the imaging interval;

wherein the image acquiring device further comprises an
exposure time setting portion which sets the exposure time, which
is set by the setting of the time lapse imaging condition, to the
imaging portion, a gain setting portion which enables setting of
30 gain of an output signal from the imaging portion, and a
brightness correcting portion which enables correction of

brightness of an image by correcting the output signal from the imaging portion; and

wherein, when the exposure time is determined to be longer
35 than the imaging interval as the contradiction, the generating the plurality of time lapse imaging conditions changes a value of the exposure time set by the exposure time setting portion to be shorter than the imaging interval, and sets a value of the gain set by the gain setting portion to a value determined from a
40 ratio of the exposure time after the change and the imaging interval, and when a set gain value exceeds a maximum gain value, sets the maximum gain value as the gain value and sets a value for correcting the brightness of the image by the brightness correcting portion based on a value determined from a ratio of
45 the value of the gain determined from the ratio and the maximum gain value.

25. (New) The method according to claim 24, wherein the imaging portion comprises an imaging portion of a microscopic image acquiring device for fluorescence photography.

26. (New) An image acquiring device for performing time lapse imaging, comprising:

imaging means for performing imaging of a subject;

time lapse imaging condition setting means for setting a
5 time lapse imaging condition including at least an exposure time
and an imaging interval, prior to the imaging of the subject by
the imaging means;

determining means for determining a contradiction of the
time lapse imaging condition set by the time lapse imaging
10 condition setting means according to a predetermined criterion;

presenting means for presenting at least information
relating to the contradiction of the time lapse imaging condition
based on a determined result determined by the determining means;

avoiding condition generating means for generating a
15 plurality of time lapse imaging conditions for avoiding the
contradiction of the time lapse imaging condition based on the
determined result determined by the determining means, and
causing information relating to the plurality of time lapse
imaging conditions to be presented by the presenting means;

20 selecting means for selecting one of the plurality of time
lapse imaging conditions from the information relating to the
plurality of time lapse imaging conditions presented by the
presenting means;

instructing means for instructing the imaging means to
25 execute time lapse imaging based on the time lapse imaging
condition selected by the selecting means;

exposure time setting means for setting the exposure time set by the time lapse imaging condition setting means to the imaging means;

30 gain setting means for enabling setting of gain of an output signal from the imaging means; and

brightness correcting means for enabling correction of brightness of the image by correcting the output signal from the imaging means;

35 wherein the determining means determines the contradiction of the time lapse imaging condition by using a relation between the exposure time and the imaging interval as the predetermined criterion; and

 wherein, when the determining means determines the
40 contradiction of the time lapse imaging condition in which the exposure time is longer than the imaging interval, the avoiding condition generating means changes a set value of the exposure time set by the exposure time setting means to be shorter than the imaging interval, and sets a value of the gain set by the
45 gain setting means to the value determined from a ratio of the exposure time after the change and the imaging interval, and when a set gain value exceeds a maximum gain value, sets the maximum gain value as the value of the gain set by the gain setting means and sets a value for correcting the brightness of the image by
50 the brightness correction means based on the value determined

from a ratio of the value of the gain determined from the ratio and the maximum gain value.

27. (New) The image acquiring device for performing time lapse imaging according to claim 26, wherein the imaging means comprises imaging means of a microscopic image acquiring device.

28. (New) An apparatus for microscopic time lapse imaging, comprising:

a camera unit, including an imager, attached to a microscope;

a presenting portion for presenting information; and
an operation controller configured to control operation of the camera unit based on conditions, including at least an exposure time and an interval time, inputted by a user,

wherein the controller judges a relationship between the exposure time and the interval time, and controls the presenting portion to present an error dialog when the relationship does not satisfy a predetermined condition; and

wherein the error dialog includes an error avoiding condition which includes changing a gain in the imager.